AYK Region
SALMON BOF RPT #15

ARCTIC-YUKON-KUSKOKWIM REGION
SALMON FISHERY REPORT

A REPORT TO THE
ALASKA BOARD OF FISHERIES

DECEMBER 1978

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES

INTRODUCTION

The Arctic-Yukon-Kuskokwim region is that portion of the state north of the Alaska Range and the Bristol Bay drainage. It includes all of the drainages of the Bering Sea and the Arctic Ocean from Cape Newenham to the U.S.-Canadian border. In addition, it includes the following Bering Sea Islands: Nunivak, St. Lawrence and St. Matthew. This is the largest management region in the state comprising over 400,000 square miles, which is equal to the combined areas of California, Oregon, Washington and Idaho. The region is subdivided into several management areas or districts as indicated in Figure 1.

There are approximately 30,000-40,000 Eskimo and Indian people in the region, the majority of whom reside in excess of 110 small villages scattered along the coast and the major river systems. Nearly all of these native people are dependent to varying degrees on the fish and game resources for their livelihood.

REGIONAL SUMMARY

Commercial Fishery

A record harvest of 2.7 million salmon was made in the region during 1978. King and pink salmon catches were the largest ever recorded. The pink salmon catch of 395,300 was nearly double the previous high catch in 1974. Catches of chum and coho salmon were the second largest ever recorded. The 1978 harvest represented 21.2 million pounds (round weight) of salmon. Fishermen earnings totaled a record $9.9 million. The vast majority of commercial fishermen are Eskimo and Indian residents of the region.

Commercial harvests in the region have increased about thirty times since 1960. Recent increases have been largely due to development of

chum salmon fisheries in the Yukon River, Kuskokwim River and Kotzebue areas.

The 1978 commercial catches made in each management area are shown below:

Area	King	Red	Coho	Pink	Chum	Total
Kuskokwim	63,165	13,734	248,052	62,921	283,116	670,988
Yukon	97,584	-	25,648	-	1,288,015	1,411,247
Norton Sound	9,819	12	7,335	325,503	189,279	531,948
Kotzebue	142	-	-	6,865	111,494	118,501
Totals	170,710	13,746	281,035	395,289	1,871,904	2,732,684
Previous Season Record	161,500 (1967)	29,000 (1974)	305,300 (1977)	208,600 (1974)	1,984,600 (1975)	2,436,700 (1974)
5 Year Average (1973-77)	128,800	17,100	129,200	93,400	1,560,200	1,988,700

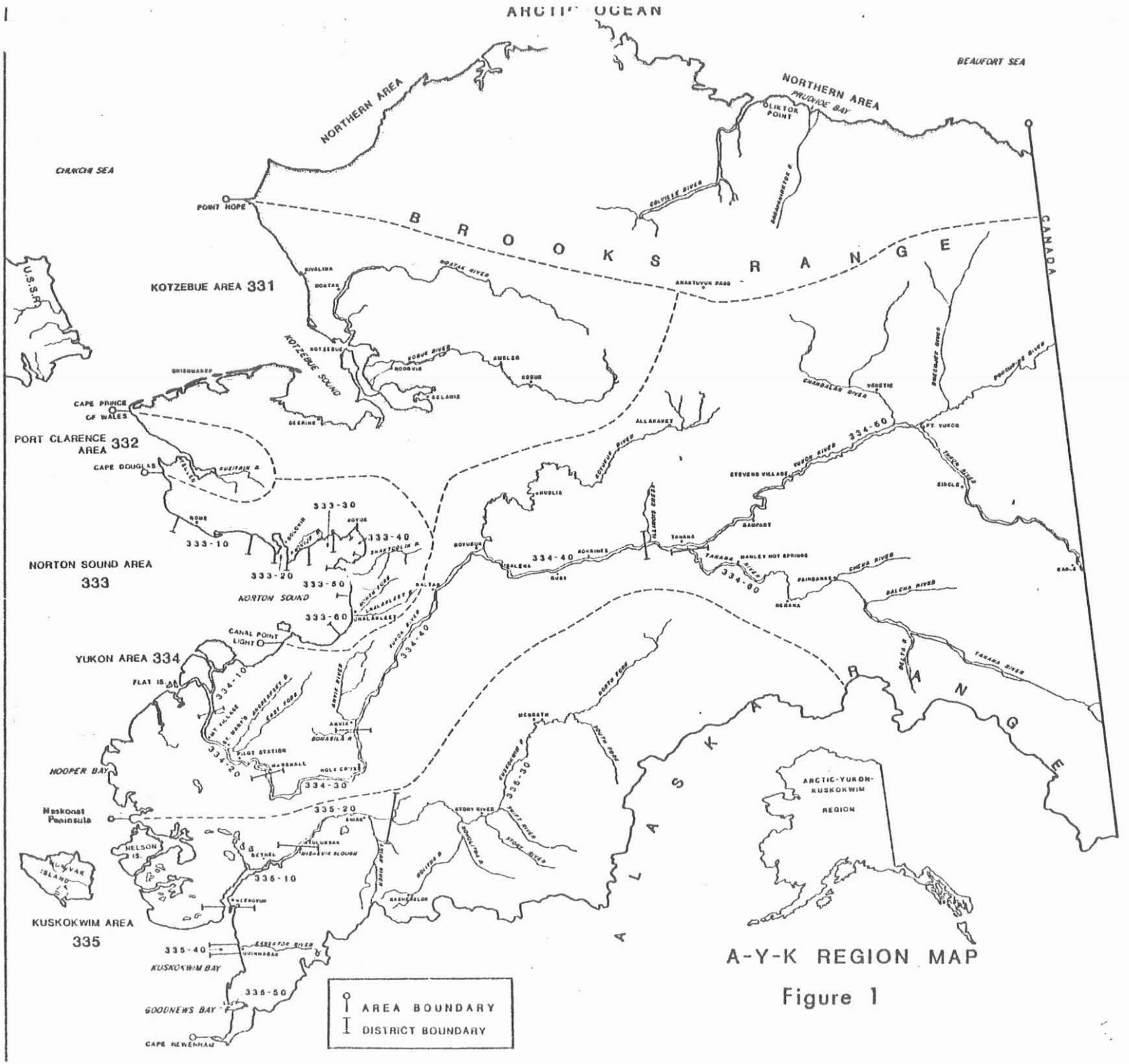
Subsistence Fishery

Subsistence harvest information prior to 1960 is incomplete or entirely lacking for many years, but there are also records indicating that in excess of two million salmon annually were taken during the early 1900's.

About 1930 the airplane began replacing the sled dog as a mail carrier, and this started the gradual decline of the subsistence salmon fishery. This decline was accelerated during the 1966-73 period as increased welfare payments and employment opportunities, including commercial fishing activities, became available to the native people. Another very important factor tending to affect subsistence fishing effort during this period was the increased use of snow vehicles which replaced sled dogs at a faster rate than did the airplane. Since considerable numbers of salmon and other fish are fed to sled dogs, fewer fish were required for subsistence purposes as the canine population declined. The decline in subsistence fishing was not related necessarily to fish abundance, but mainly reflects decreases in effort and dependence due to

a changing way of life. Coincidental with the legislation allowing subsistence salmon roe sales in 1974-77, catches during this recent period have increased substantially compared to the relatively small catches made the previous four years.

Subsistence catch data for 1978 is preliminary at this time since a few late catch reports are still being received. The projected 1978 harvest should approximate 515,000 salmon, a decrease compared to the 1977 catch. The recent average annual subsistence harvest recorded during the 1973-77 period was 605,000 salmon.



A-Y-K REGION MAP

Figure 1

Kuskokwim Area

This area includes all waters of the Kuskokwim River drainage and all waters from Cape Newenham north to Naskonat Peninsula. Commercial salmon fishing is allowed along 250 miles of the lower Kuskokwim River and in the Quinhagak and Goodnews Bay subdistricts located along the coast (Figure 2).

The 1978 Kuskokwim area commercial salmon harvest of 671,000 fish was the largest catch ever recorded. Species composition was 63,200 king, 13,700 red, 248,100 coho, 62,900 pink and 283,100 chum salmon. Table 1 presents commercial catches for the Kuskokwim River, Quinhagak and Goodnews Bay subdistricts.

Record numbers of fishing vessels were recorded during each of the three salmon seasons on the Kuskokwim River this year. A total of 850 C.F.E.C. permits were issued in 1978. Commercial fishermen earned approximately $3,242,000 for their catch.

Kuskokwim River

In 1978 the combined commercial and subsistence king salmon catch totaled 82,700 fish (Table 2). The commercial harvest of 45,600 kings was the largest on record and 33 percent above the recent five year average. The majority of comparative catch and escapement data indicate that the 1978 king salmon run was above average compared to recent years. In an attempt to reverse the decline in recent year escapements and in view of an increase in fishing effort (Table 3) and efficiency, the commercial king salmon harvest goal in subdistrict 335-10 was revised downward to 20,000 fish (except during years of high abundance) beginning in 1975. Beginning with the 1978 season the Department increased the commercial harvest guideline level to 25 thousand king

salmon because of the above average returns in 1976 and 1977 which indicated that the runs were rebuilding. Another factor in the increase of the harvest guideline was the prohibition of subsistence roe sales by the Board of Fisheries for the 1978 season and it was projected that subsistence catches would be lower than the roe sale years of 1974-77.

Fishing time for the 1978 commercial king salmon season totaled 26 hours in the lower river. The reason for this increase, from the 12 hours allowed in 1976 and 1977, were reduced fishing effort due to price disputes with local processors, the occurrence of severe storms which curtailed effort, and a strong run of kings.

Although the commercial chum salmon fishery has increased tremendously since its interception in 1971, the subsistence fishery is still of prime importance. Commercial and subsistence effort and catches have increased greatly in recent years, resulting in the institution of a combined harvest goal in subdistrict 335-10 of approximately 400,000 fish for the 1978 season. This season's chum salmon run was judged above average. The commercial harvest of 249,700 fish was attributed to the large run and increased fishing effort, up 15 percent since 1977 (Table 3). Due to an exceptionally early run of chums, good escapements were achcieved when fishermen targeted on king salmon, consequently fishing time was increased during the latter part of the chum season. Commercial fishermen were allowed a total of 48 hours this season, compared to the 30 hours allowed in 1977.

When commercial catches are added to subsistence catches, the total utilization of 368,100 was the fourth largest documented chum salmon catch since 1960 (Table 4).

The coho salmon run this year was also judged above average in magnitude. Additionally, commercial coho salmon fishing effort was the largest on record with 597 fishermen participating (Table 3). The commercial coho salmon catch of 211,500 fish was 11 percent below the record 1977 catch of 237,700 cohos, but 28 percent above the current five year average.

The Kuskokwim River subsistence king salmon harvest of 37,000 kings was 18 percent below the 5-year average catch of 45,000 fish. The subsistence chum salmon harvest of 118,300 was below to the recent 5-year average catch of 201,200.

Water levels in 1978 were above normal in some portions of the Kuskokwim district. Aerial surveys of streams where water conditions were not turbid indicated good escapements of king salmon. The Kogrukluk River counting tower count of 7,405 kings was the largest on record. Ignatti weir on the Holitna River also produced record counts for king and chum salmon. Table 5 presents comparative king salmon index counts. Escapements of chum salmon were judged as very good.

Quinhagak and Goodnews Bay

These two fisheries are located south of the Kuskokwim River (Figure 2). Fishermen in these subdistricts are restricted to the use of gill nets of less than 6-inch stretched mesh. A total of 17,600 kings, 13,000 reds, 33,900 cohos, 57,000 pinks and 33,400 chums, totaling 154,900 fish were harvested in 1978. Harvest of kings, cohos and pinks were above average.

Although information is limited, escapements for all species were good.

Outlook for 1979

Based on brood year catch and escapement data, the return of king salmon to the Kuskokwim River in 1979 is expected to be below average to

average in magnitude. Limited comparative brood year escapement data is available for Kuskokwim River chum and coho stocks, however comparative commercial catch data indicate an average return of these species in 1979.

Figure 2.
KUSKOKWIM AREA

Table 1. Kuskokwim district commercial catches by drainage, 1960-1978

Kuskokwim River 1/	King	Red	Coho	Pink	Chum	Total
1960	5,969	0	2,498	0		8,467
1961	18,918	0	5,044	0		23,962
1962	15,341	0	12,432	0		27,773
1963	12,016	0	15,660	0		27,676
1964	17,149	0	28,613	0		45,762
1965	21,989	0	12,191	0		34,180
1966	25,545	0	22,985	0		48,530
1967	29,986	0	56,313	0	148	86,447
1968	34,278	0	127,306	0	187	161,771
1969	43,997	322	83,765	0	7,165	135,249
1970	39,290	117	38,601	44	1,664	79,716
1971	40,274	2,606	5,253	0	68,914	117,047
1972	39,454	102	22,579	8	78,619	140,762
1973	32,838	369	130,876	33	148,746	312,862
1974	18,664	136	147,269	37	171,887	337,984
1975 4/	21,720	23	81,945	10	181,840	285,538
1976	30,735	2,971	88,501	133	177,864	300,204
1977	35,830	9,379	241,364	203	248,721	535,451
1978	45,612	733	214,144	5,895	249,730	516,114
5 yr Average	30,512	2,648	154,645	1,256	206,008	395,069

Quinhagak (Kanektok River) 2/	King	Red	Coho	Pink	Chum	Total
1960	0	5,649	3,000	0	0	8,649
1961	4,328	2,308	46	90	18,864	25,636
1962	5,526	10,313	0	4,340	45,707	65,886
1963	6,555	0	0	0	0	6,555
1964	4,081	13,422	379	939	707	19,528
1965	2,976	1,886	0	0	4,242	9,104
1966	278	1,030	0	268	2,610	4,186
1967	0	652	1,926	0	8,087	10,665
1968	8,879	5,884	21,511	75,818	19,497	131,589
1969	16,802	3,784	15,077	953	38,206	74,822
1970	18,629	5,393	16,850	15,195	46,556	102,623
1971	4,185	3,118	2,982	13	30,208	40,506
1972	15,880	3,286	376	1,878	17,247	38,667
1973	14,993	2,783	16,515	277	19,680	54,248
1974	8,704	19,510	10,979	43,642	15,298	98,133
1975 4/	3,928	8,584	10,742	486	35,233	58,973
1976	14,110	6,090	13,777	31,412	43,659	109,048
1977	19,090	5,519	9,028	202	43,707	77,546
1978	12,335	7,589	20,144	47,033	24,796	111,897
5 yr Average	11,633	9,458	12,934	24,555	32,538	91,118

Goodnews Bay (Goodnews River) 3/	King	Red	Coho	Pink	Chum	Total
1968			5,485			5,485
1969	3,978	6,256	11,631	298	5,006	27,169
1970	7,163	7,144	6,974	12,183	12,346	45,630
1971	477	330	1,771	0	301	2,879
1972	264	924	925	66	1,331	3,510
1973	3,543	2,072	5,017	324	15,781	26,737
1974	3,302	9,357	21,340	16,373	8,942	59,314
1975 4/	2,151	8,928	17,127	403	6,459	35,068
1976	4,417	5,575	9,852	8,453	10,354	38,651
1977	3,336	3,723	13,335	29	6,531	26,954
1978	5,218	5,412	13,764	9,993	8,590	42,977
5 yr Average	3,685	6,599	15,084	7,050	8,175	40,593

1/ Includes subdistricts 335-10, 335-20 and 335-30. Commercial fishing in 335-30 has been prohibited since 1966.
2/ Subdistrict 335-40.
3/ Subdistrict 335-50 and includes Chagvan Bay.
4/ Final catch data used.

Table 2. Total utilization of Kuskokwim River king salmon, 1960-1978.

Year	Commercial Catch 1/	Subsistence Catch 2/	Total Utilization
1960	5,969	20,361	26,330
1961	18,918	30,910	49,828
1962	15,341	14,642	29,983
1963	12,016	37,246	49,262
1964	17,149	29,017	46,166
1965	21,989	27,143	49,132
1966	25,545	49,606	75,151
1967	29,986	57,875	87,861
1968	34,278	30,230	64,508
1969	43,997	40,138	84,135
1970	39,290	69,204	108,494
1971	40,274	42,926	83,200
1972	39,454	40,145	79,599
1973	32,838	38,526	71,365
1974	18,664	26,665	45,329
1975	21,720	47,784	69,504
1976	30,735	57,917	88,652
1977	35,830	55,339	91,169
1978	45,612	37,049	82,661
Previous 5 yr. average	30,512	44,951	75,463

1/ Subdistricts 335-10, 335-20 and 335-30

2/ Catches are expanded and include all villages surveyed each year. Data includes a few villages not included in comparative catch tables.

Table 3. Kuskokwim River commercial effort data, 1965-78 1/

Year	King Season	Chum Season	Coho Season
1965	195		
1966	210		107
1967	233		147
1968	303		242
1969	329		231
1970	361		266
1971	418	216	83
1972	405	176	245
1973	456	341	411
1974	606	467	516
1975	472	540	533
1976	561	517	516
1977	563	522	572
1978	615	617	597

1/ Number of actual fishing vessels.

Table 4. Total utilization of Kuskokwim River chum salmon, 1960-1978.

Year	Commercial Catch 1/	Subsistence Catch 2/3/	Total Utilization
1960		327,297	327,297
1961		185,447	185,447
1962		165,626	165,626
1963		141,550	141,550
1964		189,660	189,660
1965		283,459	283,459
1966		174,660	174,660
1967	148	205,263	205,411
1968	187	260,023	260,210
1969	7,165	198,628	205,793
1970	1,664	245,550	247,214
1971	68,914	116,391	185,305
1972	78,619	120,316	198,935
1973	148,746	179,259	328,005
1974	171,887	277,170	449,057
1975	181,840	176,389	358,229
1976	177,864	223,792	401,656
1977	248,721	210,294	458,915
1978	249,730	118,341	368,071
Previous 5 yr. average	206,008	201,197	407,205

1/ Subdistricts 335-10 and 335-20.

2/ Catches are expanded and include all villages surveyed each year, 335-10, 335-20 and 335-30

3/ Includes small numbers of red and coho salmon.

Table 5. Index counts of Kuskokwim River king salmon spawning escapements, 1965-1978 1/

Year	Aerial Surveys				Counting Tower	Ignatti Wei
	Kisaralik River	Aniak River (Above Salmon R.)	Chukowan River	Kogrukluk River	Kogrukluk River	Holitna River
1965	194 2/	-	-	-	-	
1966	204 2/	485	986	1,645	-	
1967	-	758 2/	-	1,033	-	
1968	487	783	1,260	2,180	-	
1969	-	537	-	-	2,980	
1970	531	592	1,118	1,598	3,815	
1971	-	144 2/	-	636 2/	-	
1972	-	93 2/	163 2/	476 2/	1,934	
1973	152	200 2/	229	610 2/	1,725	
1974	4 2/	15 2/	43 2/	-	3,410	
1975	129 2/	145	667	1,062	1,970	
1976	873	281	727	518	2,900	5,507
1977	-	21 3/	-	1,342	1,988 4/	1,385 4/
1978	2,417	-	1,064	-	7,405	13,132

1/ ADF&G Annual Management Report, Kuskokwim area, 1978.
2/ Surveys rated poor.
3/ Survey only uppermost 5 miles of River.
4/ Poor counting conditions - probably only a minimum count.

Yukon Area

The Yukon area includes all waters of the Yukon River drainage in Alaska and all waters from Naskonat Peninsula north to Canal Point light. Commercial salmon fishing is allowed along 1,400 river miles in six subdistricts managed under various regulations (Figure 3).

The 1978 commercial harvest of 1,411,200 salmon was the largest in history and exceeded the previous 5-year average of 892,300. Species composition of the 1978 catch was 97,600 kings; 25,700 cohos and 1,288,000 chums. The chum catch was the largest ever recorded. Table 6 presents annual commercial catches by subdistrict since 1960.

In the lower Yukon area a total of 693 CFEC gillnet permits were issued while in the upper Yukon area 73 gillnet and 163 fishwheel permits were issued. Fishing effort has apparently stabilized at current levels due to implementation of the Limited Entry Program. Commercial fishermen earned approximately $5,246,000 for their catches in 1978.

The 1978 Yukon River commercial king salmon catch exceeded the previous 5-year average of 84,400 fish. Catch and escapement data indicate that the magnitude of the run was above average.

The 1978 commercial chum salmon catch was the largest in history and exceeded the previous 5-year average by 499,700 fish. The record chum salmon catch this year was attributed to increased fishing effort on summer chums.

Subsistence utilization of summer chums, which are more abundant than the fall run, has generally decreased in recent years, due to a decline in effort and dependence. In order to encourage greater commercial harvesting of summer chums, regulations have been relaxed. In 1978, a record total of 1,053,200 summer chums was commercially harvested in the Yukon area, mostly in subdistricts 1, 2 and 4 where 94 percent of the catch was taken. The 1978 Yukon area summer chum salmon catch was

double the recent 5 year average of 545,000. Record summer chum salmon catches were made in all subdistricts except subdistricts 1 and 5. In subdistrict 4 the summer chum catch totaled 364,400 fish, a 72 percent increase over the previous record harvest in 1976. Because of the rapid growth of the summer chum salmon fishery in subdistrict 4, the staff is proposing a reduction in fishing time from 5 to 4 days a week in order to provide for more balanced escapements (proposal #8).

A total of 234,800 fall chums was harvested in the Yukon area in 1978. The 1978 commercial catch was similar to the recent five year average of 243,300 fish. Catch and escapement data indicate the run was average to below average in magnitude.

The Yukon River fall chum fishery has expanded rapidly in recent years. The Department has established a 250,000 optimum fall chum salmon harvest goal until future returns from current harvest levels can be evaluated. Beginning with the 1974 season, the Board established quotas of 200,000 chum salmon for the lower three subdistricts (combined) and 50,000 combined chum and coho salmon for the upper three subdistricts.

In order to allow for more flexible management of the fall chum runs, the Department is proposing replacing the rigid quota system with a range of guideline harvest levels (proposal #18). Also the Department is proposing a reduction in fishing time of 1 day per week in all subdistricts in order to provide for more balanced harvests and escapements of the fall chum run (proposal #9).

The 1978 commercial coho salmon catch exceeded the previous 5-year average of 19,600 fish. Cohos are generally of minor importance and are taken incidentally to the more abundant fall chum salmon.

Yukon River subsistence catches tabulated to date total 25,600 king and 241,200 other salmon, primarily chums, compared to recent 5 year average of 21,000 king and 275,000 other salmon (Table 7). An additional

400 king and 15,800 other salmon were taken for subsistence in the coastal villages of Scammon Bay and Hooper Bay during 1978.

King salmon escapements in most index spawning areas ranged from average to above average (Table 8). Record escapements were documented in the East Fork of the Andreafsky River, Nulato River, Chena River and Salcha River.

Summer chum escapements were generally considered good throughout the drainage. Table 9 presents comparable escapement data in various index streams. In the Anvik and Andreafsky River systems, the major summer chum salmon producers, estimated escapements of nearly 418,000 chums were documented. Throughout the Yukon River drainage a total of 550,000 summer chums were documented in selected escapement surveys.

During the past seven years the Department has conducted intensive surveys of fall chum and coho salmon spawners in the upper Yukon River drainage (Table 10). In 1978, escapements of fall chums were considered average to above average in the Tanana River system. Escapements in the Porcupine River system were considered below average.

Tanana River drainage coho salmon escapements were considered average to above average in the Clearwater Lake and Delta Clearwater River systems, but below average in magnitude in the Nenana River.

Outlook for 1979

Based on parent year catch and escapement information the magnitude of the Yukon River king salmon run in 1979 is expected to be below average in magnitude. Summer and fall chum salmon runs in 1979 are expected to be above average in magnitude.

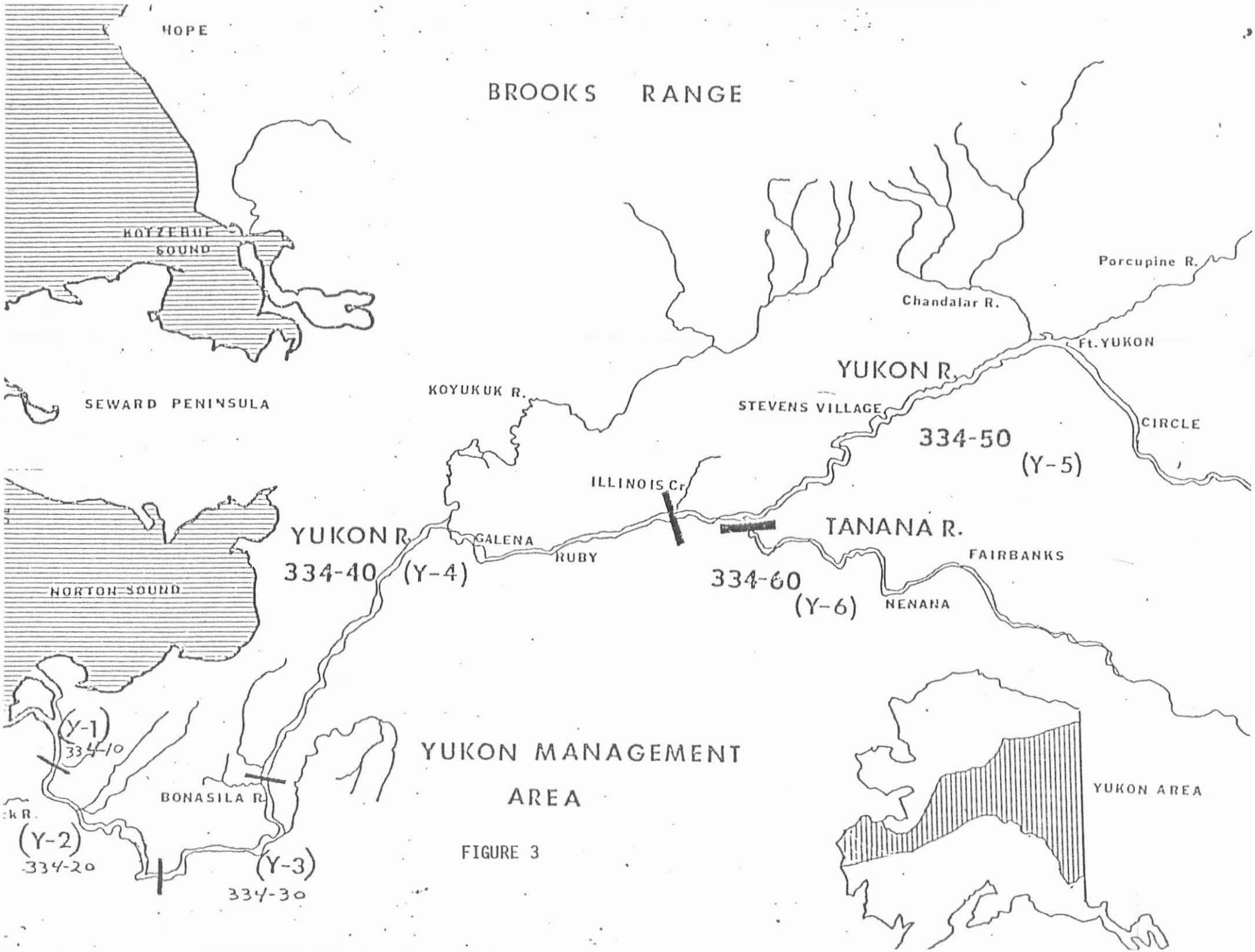

HOPE
BROOKS RANGE
KOTZEBUE SOUND
SEWARD PENINSULA
Porcupine R.
Chandalar R.
Ft. YUKON
YUKON R.
KOYUKUK R.
STEVENS VILLAGE
CIRCLE
334-50
(Y-5)
ILLINOIS Cr.
YUKON R.
GALENA
RUBY
TANANA R.
FAIRBANKS
334-40 (Y-4)
334-60
(Y-6)
NENANA
NORTON SOUND
(Y-1)
334-10
BONASILA R.
YUKON MANAGEMENT AREA
YUKON AREA
(Y-2)
334-20
(Y-3)
334-30

FIGURE 3

Table 6. Commercial salmon catches by species and subdistricts, Yukon district, 1960-1978.

KING SALMON

	Lower Yukon Area				Upper Yukon Area				
Year	334-10	334-20	334-30	Subtotals	334-40	334-50	334-60	Subtotals	Totals
1960	50,713	15,994	-	66,707	-	-	-	884	67,591
1961	84,463	29,028	4,965	118,456	-	-	-	1,804	120,260
1962	67,099	22,224	4,687	94,010	-	-	-	724	94,734
1963	85,004	24,211	6,976	116,191	-	-	-	803	116,994
1964	67,555	20,246	4,705	92,506	-	-	-	1,081	93,587
1965	89,268	23,763	3,204	116,235	-	-	-	1,863	118,098
1966	70,788	16,927	3,612	91,327	-	-	-	1,988	93,315
1967	104,350	20,289	3,618	128,257	-	-	-	1,449	129,706
1968	79,465	21,392	4,543	105,400	-	-	-	1,126	106,526
1969	70,862	14,799	3,577	89,238	-	-	-	985	90,223
1970	57,681	17,210	3,712	78,603	-	-	-	1,666	80,269
1971	86,042	19,226	3,490	108,758	-	-	-	1,749	110,507
1972	70,052	17,855	3,841	91,748	-	-	-	1,092	92,840
1973	56,981	13,859	3,204	74,044	-	-	-	1,309	75,353
1974	71,680	17,947	3,471	93,098	685	2,663	1,473	4,821	97,919
1975	44,585	11,187	4,207	59,979	389	2,872	500	3,761	63,740
1976	62,632	17,413	4,239	84,284	385	2,900	1,102	4,387	88,671
1977	69,456	16,781	3,943	90,180	959	4,267	1,008	6,234	96,414
1978	57,890	32,317	2,917	93,124	701	3,115	644	4,460	97,584

COHO SALMON

	Lower Yukon Area				Upper Yukon Area				
Year	334-10	334-20	334-30	Subtotals	334-40	334-50	334-60	Subtotals	Totals
1960	-	-	-	-	-	-	-	-	-
1961	2,855	-	-	2,855	-	-	-	-	2,855
1962	22,926	-	-	22,926	-	-	-	-	22,926
1963	5,572 1/	-	-	5,572	-	-	-	-	5,572
1964	2,446	-	-	2,446	-	-	-	-	2,446
1965	350	-	-	350	-	-	-	-	350
1966	19,254	-	-	19,254	-	-	-	-	19,254
1967	9,925	-	1,122	11,047	-	-	-	-	11,047
1968	13,153	-	150	13,303	-	-	-	-	13,303
1969	14,041	-	845	14,886	-	-	-	95	14,981
1970	12,245	-	-	12,245	-	-	-	-	12,245
1971	12,165	-	-	12,165	-	-	-	38	12,203
1972	21,705	506	-	22,211	-	-	-	22	22,233
1973	34,860	1,781	-	36,641	-	-	-	-	36,641
1974	13,728	176	-	13,904	-	909	1,427	2,336	16,240
1975	2,288	-	-	2,288	-	5	53	58	2,346
1976	4,084	17	-	4,101	-	-	1,096	1,096	5,197
1977	30,588	5,312	521	36,421	-	-	1,284	1,284	37,705
1978	16,262	5,835	758	22,855	32	7	2,754	2,793	25,648

CHUM SALMON

	Lower Yukon Area				Upper Yukon Area				
Year	334-10	334-20	334-30	Subtotals	334-40	334-50	334-60	Subtotals	Totals
1960	- 1/	-	-	-	-	-	-	-	-
1961	42,577 1/	-	-	42,577	-	-	-	-	42,577
1962	53,160 1/	-	-	53,160	-	-	-	-	53,160
1963	-	-	-	-	-	-	-	-	-
1964	8,347	-	-	8,347	-	-	-	-	8,347
1965	22,936	-	-	22,936	-	-	-	381	23,317
1966	69,836	-	1,209	71,045	-	-	-	-	71,045
1967	46,148	1,425	1,880	49,453	-	-	-	-	49,453
1968	62,852 1/	1,407	3,136	67,395	-	-	-	-	67,395
1969	184,411	5,024	1,722	191,157	-	-	-	703	191,860
1970	320,138	22,394	3,285	346,357	-	-	-	907	346,724
1971	282,461	6,112	50	288,623	-	-	-	1,061	289,684
1972	250,945	33,805	1,340	286,590	-	-	-	1,254	287,844
1973	395,431 1/	109,138 1/	463	505,032	-	-	-	13,003	518,035
1974	641,663	127,644	2,273	771,580	37,079	30,382	40,202	107,663	879,243
1975	576,607	150,259	5,590	732,456	178,720	40,209	33,474	252,403	984,859
1976	382,216	120,959	14,504	517,679	213,019	6,247	24,564	243,830	761,509
1977	385,972	159,051	19,310	564,333	183,565	26,848	22,951	233,364	797,697
1978	523,557	277,080	38,728	839,365	375,617	25,907	47,126	448,650	1,288,015

TOTAL SALMON

	Lower Yukon Area				Upper Yukon Area				
Year	334-10	334-20	334-30	Subtotals	334-40	334-50	334-60	Subtotals	Totals
1960	50,713	15,994	-	66,707	-	-	-	884	67,591
1961	129,895	29,028	4,965	163,888	-	-	-	1,804	165,692
1962	143,185	22,224	4,687	170,096	-	-	-	724	170,820
1963	90,576	24,211	6,976	121,763	-	-	-	803	122,566
1964	78,348	20,246	4,705	103,299	-	-	-	1,081	104,380
1965	112,554	23,763	3,204	139,521	-	-	-	2,244	141,765
1966	159,878	16,927	4,821	181,626	-	-	-	1,988	183,614
1967	160,423	21,714	6,620	188,757	-	-	-	1,449	190,206
1968	155,470	22,799	7,829	186,098	-	-	-	1,126	187,224
1969	269,314	19,823	6,144	295,281	-	-	-	1,783	297,064
1970	390,064	39,604	6,997	436,665	-	-	-	2,573	439,238
1971	380,668	25,338	3,540	409,546	-	-	-	2,848	412,394
1972	342,702	52,166	5,681	400,549	-	-	-	2,368	402,917
1973	487,272 1/	124,778 1/	3,667	615,717	-	-	-	14,312	630,029
1974	727,071	145,767	5,774	875,034	37,764	33,954	43,102	116,061	993,402
1975	623,480	161,446	9,797	794,723	179,109	43,086	34,027	256,222	1,050,945
1976	448,932	138,389	18,743	606,064	213,404	9,147	25,762	249,313	855,377
1977	486,016	181,144	23,744	690,934	184,524	31,115	25,243	240,882	931,816
1978	597,709	315,232	42,403	955,344	376,350	29,029	50,524	455,903	1,411,247

1/ Includes small numbers of pink or red salmon.

Table 7. Yukon River comparative subsistence catch and effort data, 1961-1977 (numbers per fishing family are in parenthesis).

Year	Total Catch		Equivalent Catch 1/		Mean Equivalent Catch per Family 1/	
	King Salmon	Other Salmon 2/	King Salmon	Other Salmon 2/	King Salmon	Other Salmon 2/
1961	31,864	405,632	20,117	403,765	32	647
1962	21,610	356,754	10,217	325,244	18	577
1963	32,790	408,381	23,919	376,440	40	625
1964	22,877	485,630	14,847	458,609	25	762
1965	19,723	458,379	16,499	430,949	30	788
1966	14,272	214,236	11,507	204,913	23	416
1967	19,661	288,595	16,306	256,956	35	546
1968	15,006	189,607	11,883	170,552	25	358
1969	15,000	213,725	13,916	195,476	30	426
1970	15,794	223,237	13,474	199,163	34	498
1971	27,953	228,849	24,058	191,011	48	383
1972	21,868	151,008	19,314	129,343	46	311
1973	26,459	219,275	23,530	198,054	44	374
1974	23,137	323,834	19,014	284,977	38	580
1975	15,466	300,379	12,600	262,741	21	448
1976	19,329	262,624	16,196	235,056	25	358
1977	20,388	267,127	15,740	235,401	27	408
1978	25,582	241,160	23,956	208,255	36	311

Year	Fishing Families surveyed 1/	People in fishing families 1/	Snowmachines 1/	Sled dogs 1/	Gear operated 1/	
					Gill nets	Fishwheels
1961	624	3,626 (5.8)		4,806 (7.7)	577	169
1962	564	3,279 (5.8)		3,848 (6.8)	613	138
1963	602	4,154 (6.9)		4,214 (7.0)	716	156
1964	602	3,612 (6.0)		4,003 (6.6)	840	155
1965	547	3,993 (7.3)		3,993 (7.3)	645	127
1966	492	3,149 (6.4)		3,112 (6.3)	582	116
1967	471	2,779 (5.9)	192 (0.4)	2,752 (5.8)	530	86
1968	476	3,094 (6.5)	262 (0.6)	2,719 (5.7)	565	71
1969	459	2,984 (6.5)	349 (0.8)	2,448 (5.3)	930	63
1970	400	2,680 (6.7)	346 (0.9)	2,214 (5.5)	647	55
1971	499	3,244 (6.5)	460 (0.9)	2,226 (4.5)	795	63
1972	416	2,621 (6.3)	438 (1.0)	1,589 (3.8)	755	59
1973	530	3,339 (6.3)	571 (1.1)	2,375 (4.5)	991	83
1974	491	3,093 (6.3)	534 (1.1)	2,105 (4.3)	668	90
1975	587	3,698 (6.3)	762 (1.3)	2,585 (4.4)	1,119	126
1976	657	4,139 (6.3)	882 (1.3)	3,401 (5.2)	1,071	154
1977	577	3,635 (7.3)	785 (1.4)	3,413 (5.9)	755	164
1978	670	3,467 (5.2)	739 (1.1)	3,203 (4.8)	783	162

1/ Data from villages surveyed each year since 1961: Mouth to Fort Yukon and Tanana River (does not include Fairbanks area).
2/ Mostly chum salmon, some pinks and cohos.
3/ Total king and other salmon catches have been corrected.

Table 8. Comparative Yukon River drainage king salmon escapement estimates 1959-1978 1/

Year	Andreafsky River (East Fork)	Andreafsky River (West Fork)	Nulato River	Anvik River
1960	1,020	1,220	756	1,950
1961	1,003		543	1,226
1962	675 2/	762 2/		
1963				
1964	867	705		
1965		355 2/		650 2/
1966	361	303		638
1967		276 2/		336 2/
1968	380	383		297 2/
1969	231 2/	274 2/		296 2/
1970	665	574 2/		368 2/
1971	1,904	1,284		
1972	798	582 2/		1,172 4/
1973	825	788		613 4/
1974		285	78	506 5/
1975	993	421	204	720 6/
1976	818	643	648	1,155 6/
1977	2,008	1,499	487	1,354 6/
1978	2,487	1,062	920	1,281 6/

Year	Chena River	Salcha River	Nisutlin River (Sidney-100 Mi. Cr.)	Whitehorse Dam Fishway
1959				1,054
1960	132	1,660		660
1961		2,878		1,068
1962		937		1,500
1963				484
1964		450		587
1965		408		903
1966		800		563
1967				533
1968		735	407	407
1969		461 2/	105	334
1970		1,882	615	625
1971	193 2/7/	159 2/	640 3/	856
1972	138 2/7/	1,193	317	392
1973	21	249	36 2/	228
1974	1,035 7/	1,857	48 2/	273
1975	316 7/	1,055	249	313
1976	531	1,691	102	120
1977	563	1,202	77	277
1978	1,726	3,499	375	670

1/ With exception of Whitehorse fishway counts, the data was obtained from aerial surveys which were made only of the main stem of each river listed.
2/ Incomplete survey or poor survey conditions resulting in a very minimal count.
3/ Environment Canada - Fisheries Service survey.
4/ Combination tower counts and aerial survey estimates.
5/ Tower count.
6/ Combination aerial and boat surveys.
7/ Boat surveys.

Table 9. Comparative Yukon River drainage summer chum salmon aerial survey escapement estimates, 1958-1978.

Year	SUMMER CHUMS			
	Andreafsky River (East Fork)	Andreafsky River (West Fork)	Anvik River	Salcha River
1958			100-200,000	
1959			200,000	
1960	3,830		11,110	670
1961	8,110			1,152
1962	18,040	19,530	20,600	1,161
1963				
1964		12,810	12-14,000 1/	250 1/
1965		14,670 1/	100,000	2,375
1966	25,619	18,145	37,500	2,200
1967		14,495 2/	116,000	
1968	17,600 2/	74,600 2/	51,580 1/	3,790
1969	119,000	159,500		425 1/
1970	84,090	91,710 1/	232,780	7,879
1971	98,095	71,745		306 1/
1972	41,460	25,573	245,857 3/	947 1/
1973	10,149 1/	51,835	86,665 3/	290
1974	3,215 1/	33,258	201,277 4/	8,040 5/
1975	223,485	235,954	845,485	7,573
1976	105,347	118,420	406,166 3/	6,474
1977	112,722	63,120	269,004 3/	677
1978	127,050	57,321	251,399 3/	5,405

1/ Poor or incomplete survey.
2/ Includes some pinks.
3/ Combined tower and aerial survey estimates.
4/ Tower counts.
5/ Combined aerial and boat surveys.

Table 10. Comparative Yukon River drainage fall chum salmon aerial survey escapement estimates, 1971-1978 1/

	1971	1972	1973	1974	1975	1976	1977	1978
TANANA RIVER DRAINAGE								
Bear Paw River	-	-	1,530	2,996	1,657	-	-	-
Toklat River drainage								
Upper Toklat River 3/	-	1,000 2/	6,957	34,310	42,418	35,224	25,000	35,000
Lower Toklat River	-	-	-	-	35,867	2,000 2/	-	2,000
Subtotal Toklat R. drainage			6,957	34,310	78,285	37,224	25,000	37,000
UPPER TANANA RIVER DRAINAGE								
Benchmark #735 Slough	-	5,255	127 2/	1,450	-	336	1,270	1,705
Delta River	-	3,650	7,971	4,010	3,946 7/	5,526	17,925	10,051
Upper Tanana River 4/	-	8,350	5,635	4,567	-	4,979	3,725	5,700
Bluff Cabin Slough	-	6,040	3,450	4,840	5,000 2/	3,197	6,491	5,340
Delta Clearwater Slough (1 Mile Slough)	-	-	1,720	1,235	745 2/	1,552	1,900	475
Subtotal Upper Tanana R. drainage		23,295	18,903	16,102	9,691	15,590	31,311	23,271
CHANDALAR RIVER	-	-	-	17,455	6,345 2/	58 2/	4,183	-
PORCUPINE RIVER DRAINAGE								
Sheenjek River	-	-	1,175	40,507	78,060	12,023	20,506	14,610
Fishing Branch River (Yukon Terr.)	250,300,000	35,125 5/	15,987 6/	32,525 6/	353,282 6/	13,450	32,500	15,000
Subtotal Porcupine R. drainage	250-300,000	35,125	17,162	73,032	431,342	25,473	53,006	29,610
TOTAL	250-300,000	59,420	44,552	143,895	527,320	78,345	113,500	89,881

1/ All surveys rated fair-good unless rated otherwise. Only peak estimates listed.
2/ Poor or incomplete survey; very minimal and/or rough estimate.
3/ Includes following areas: Toklat River in vicinity of roadhouse, Shushana River and Geiger Creek.
4/ Richardson Highway Bridge to Blue Creek.
5/ Combined tagging population estimate and weir count.
6/ Weir count.
7/ Foot survey.

Norton Sound Area

This area includes all waters from Canal Point Light north to Cape Douglas. It is subdivided into six subdistricts, each containing at least one major salmon spawning stream (Figure 4). Commercial fishing is conducted with set gill nets, primarily near stream mouths. It is assumed that the majority of salmon captured commercially in each subdistrict are bound for streams within that subdistrict; however, this assumption is only now being studied by stock separation programs.

The commercial salmon harvest of 531,900 fish was the largest on record and included 9,800 king, 7,300 coho, 325,500 pink and 189,300 chum salmon. The king and pink salmon harvest was the largest ever documented.

A total of 186 fishing vessels participated in the commercial fishery in 1978, 32% below record effort levels in 1975. CFEC gillnet permits issued in 1978 totaled 192. Commercial fishermen earned approximately $814,000 for their catch.

Subsistence fishermen caught a reported 52,000 salmon in 1978, which represents an 85% increase above the recent 5-year annual average harvest. A large portion of this catch and increase was pink salmon.

Escapements of chinooks, cohos and chum salmon were generally at least average in all subdistricts; however, chum salmon escapements to Moses Point were below average and resulted in an extended in-season closure of the commercial fishery. Similarity, chum salmon escapements to Golovin index streams were lagging near the peak of the fishery, which resulted in a short commercial closure to insure escapements. Pink salmon escapements to all subdistricts were the largest on record.

Comparative commercial and subsistence catch data is presented in Table 11 while escapement information is presented in Table 12.

Outlook for 1979

Average chum salmon escapements were documented in the 1975 parent year. Chum salmon returns in general to Norton Sound are expected to be average in 1979 with the exception of the Moses Point area where below average escapements occurred in 1975. Norton Sound pink salmon do not show a strong odd/even year cycle, however parent year escapements in 1977 were average which may indicate similar returns in 1979.

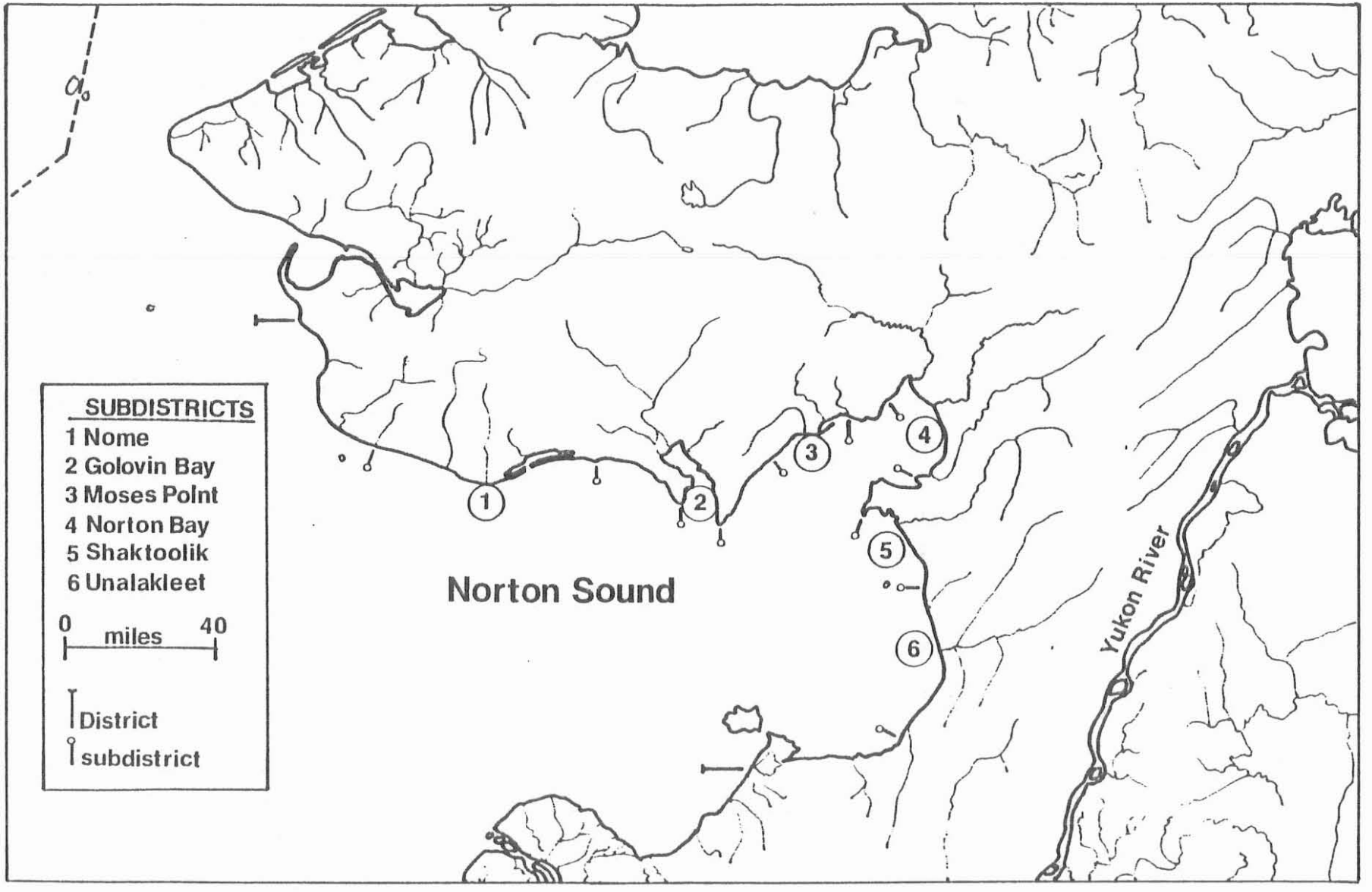


Figure 4. Norton Sound district and subdistricts

Table 11. Commercial and subsistence salmon catches, Norton Sound district, 1961-1978

Year	Commercial 1/					Subsistence 2/					Combined 1/				
	King	Coho	Pink	Chum	TOTAL	King	Coho	Pink	Chum	TOTAL	King	Coho	Pink	Chum	TOTAL
1961	5,300	13,807	34,237	48,332	101,676						5,300	13,807	34,237	48,332	101,676
1962	7,286	9,156	33,187	182,784	232,413						7,286	9,156	33,187	182,784	232,413
1963	6,613	16,765	55,675	154,789	233,792	5	118	16,607	17,635	34,365	6,618	16,883	72,232	172,424	268,157
1964	2,018	98	13,567	148,862	164,545	565	2,567	9,225	12,486	24,843	2,583	2,665	22,792	161,348	189,388
1965	1,449	2,030	220	36,795	40,494	574	4,812	19,131	30,772	55,289	2,023	6,842	19,351	67,567	95,783
1966	1,553	5,755	12,778	80,245	100,331	269	2,210	14,335	21,873	38,687	1,822	7,965	27,113	102,118	139,018
1967	1,804	2,379	28,879	41,756	74,818	817	1,222	17,516	22,724	42,279	2,621	3,601	46,395	64,480	117,097
1968	1,045	6,885	71,179	45,390	124,499	237	2,391	36,912	11,661	41,201	1,282	9,276	108,091	57,051	175,700
1969	2,392	6,836	86,949	82,795	178,972	436	2,191	18,562	15,615	36,804	2,828	9,027	105,511	98,410	215,776
1970	1,853	4,423	64,908	107,034	178,218	561	4,675	26,127	22,703	54,126	2,419	9,098	91,035	129,797	232,374
1971	2,593	3,127	4,895	131,362	141,977	1,026	4,097	10,863	21,815	37,801	3,619	7,224	15,758	153,177	179,778
1972	2,938	454	45,182	100,920	149,494	804	2,319	14,158	13,966	31,247	3,742	2,773	59,340	114,886	180,741
1973	1,918	9,282	46,499	119,098	176,797	392	520	14,770	7,185	22,867	2,310	9,802	61,269	126,283	199,664
1974	2,951	2,092	148,519	162,267	315,829	420	1,054	16,426	3,958	21,868	3,371	3,156	164,945	166,225	337,697
1975	2,393	4,593	32,388	212,485	251,861	186	192	15,803	8,124	24,305	2,579	4,785	48,191	220,609	276,166
1976	2,219	6,916	87,892	96,250	193,277	203	1,004	18,048	7,718	26,973	2,422	7,920	105,940	103,968	220,250
1977	4,413	3,574	49,361	202,164	259,782	846	2,530	14,296	26,607	44,279	2,529	6,104	63,657	228,771	304,061
1978	9,819	7,335	325,503	189,279	531,936	1,211	2,981	35,281	12,257	51,730	11,030	10,316	360,784	201,536	583,666
5-Yr. Avg.	2,808	5,318	72,799	158,051	238,974	409	1,062	15,869	10,718	28,058	3,217	6,380	88,668	168,769	267,032

1/ Small number of reds taken, but not included in totals.

Table 12. Comparative aerial surveys of Norton Sound streams, 1961-1978.

YEAR	CHUM	PINK	PINK AND CHUM[1/]
Nome(Subdistrict 1)			
NOME RIVER			
1960		410	
1963	126	3,719	
1964			480
1965	294		
1971	75	7,755	
1973	710	14,960	
1974	854	17,830	
1975	975	3,405	
1976	1,200	6,700	
1977	3,046	1,726	
1978	5,242	34,900	
Golovin(Subdistrict 2)			
NIUKLUK RIVER			
1962			27,879
1964	13,687	4,103	
1966	21,300	8,600	4,700
1967	20,546		
1968			85,125
1969	10,240	92,650	
1970	7,300	60,300	
1971	22,605	8,370	
1972	10,500	22,600	
1973	15,156	14,326	
1974	8,720	8,915	
1975	16,453	10,089	
1976	4,134	7,190	
1977	10,456	1,921	
1978	14,365	208,300	
Moses Pt.(Subdistrict 3)			
KWINIUK RIVER			
1965	26,634	8,301	
1966	32,786	10,629	
1967	24,444	3,508	
1968	18,813	126,764	
1969	19,687	56,683	
1970	68,004	235,135	
1971	38,679	16,634	
1972	30,686	62,461	
1973	28,617	38,426	
1974	35,899	40,816	
1975	14,344	57,317	
1976	6,466	28,087	
1977	22,757	46,234	
1978	10,822	67,671	

Table 12.(cont) Comparative aerial surveys of Norton Sound streams 1961-1978.

YEAR	CHUM	PINK	PINK AND CHUM[1/]
Shaktoolik(Subdistrict 5)			
SHAKTOOLIK RIVER			
1961			10,300
1962			36,417
1963			29,987
1964			16,327
1966			4,060
1975	16,601	37,971	
1976	1,736	12,175	
1977	20,899	7,602	
1978	19,972	203,303	
Unalakleet(Subdistrict 6)			
UNALAKLEET RIVER			
1961			50,260
1962			46,838
1963			19,305
1964			28,214
1966			5,200
1968			112,812
1970	950	95,075	
1972	7,852	12,450	
1975	10,501	16,750	
1976			38,325
1977	16,038	18,170	
1978	28,600	491,706	

1/ Not distinguished by species.

Kotzebue Area

This area includes all waters from Cape Prince of Wales north to Point Hope (Figure 5). The major salmon species in this area are chum salmon, bound primarily for the Kobuk and Noatak rivers. The Kobuk River run arrives in the district first, immediately after ice break-up, and is followed by the Noatak River run. The Kobuk River run peaks during the third week of July, while the Noatak River run peaks during the second week of August. These fish are used not only within the commercial fishery in Kotzebue Sound, but also by five subsistence villages on the Kobuk River and one on the Noatak River.

The commercial chum salmon harvest of 111,500 fish was the smallest since 1969 and was 69% below the recent 5-year average annual catch of 386,000 fish (Table 13).

A total of 208 fishing vessels participated in the commercial fishery in 1978, which was 22% below record levels in 1975. Also 241 C.F.E.C. gillnet permits were issued in 1978. Commercial fishermen earned approximately $575,000 for their catch.

Salmon were first landed commercially on July 1 (the opening date of the fishing season) and were the earliest catches documented since statehood. Early catches did not indicate a large run was in progress; however, due to the lack of timely escapement data from Kobuk River index streams, fishing restrictions were not imposed until July 25. These fishing restrictions were necessary not only to aid escapements, but to protect subsistence catches of the Kobuk River villages. As additional information became available from comparative commercial catch statistics and department test fishing data which indicated a below average run, a decision was made to close the fishery on August 7. The season was eventually reopened, but continued on an abbreviated

fishing schedule.

In order to afford more protection for the early arriving Kobuk River chum salmon stocks, the staff is proposing opening the Kotzebue commercial fishing season by emergency order instead of a set date of July 1 (proposal #5). Also because of a buildup of fishing effort in recent years and the necessity to give maximum protection to Kobuk River stocks, the staff is proposing regulating the commercial fishing periods before August 1 by emergency order instead of the present four day a week schedule (proposal #7). Also this proposal would reduce the scheduled fishing period from four to three days a week after August 1.

Subsistence fishermen caught a reported 12,900 chum salmon in 1978, which represented a 35% decrease from the recent 5-year average annual harvest.

Aerial surveys of index tributaries indicated that chum salmon escapements to the Kobuk River were very poor, while Noatak River escapements (aerial survey and test fishing data) were below average. Pink salmon escapements appeared to be above average.

Outlook for 1979

Chum salmon escapements of the 1975 brood year to the Noatak and Kobuk rivers were above average. The return in 1979 may therefore be of similar magnitude. It should be noted however, that Kotzebue chum salmon stocks inhabit the northernmost part of the range for this species and may be subject to large fluctuations in returns.

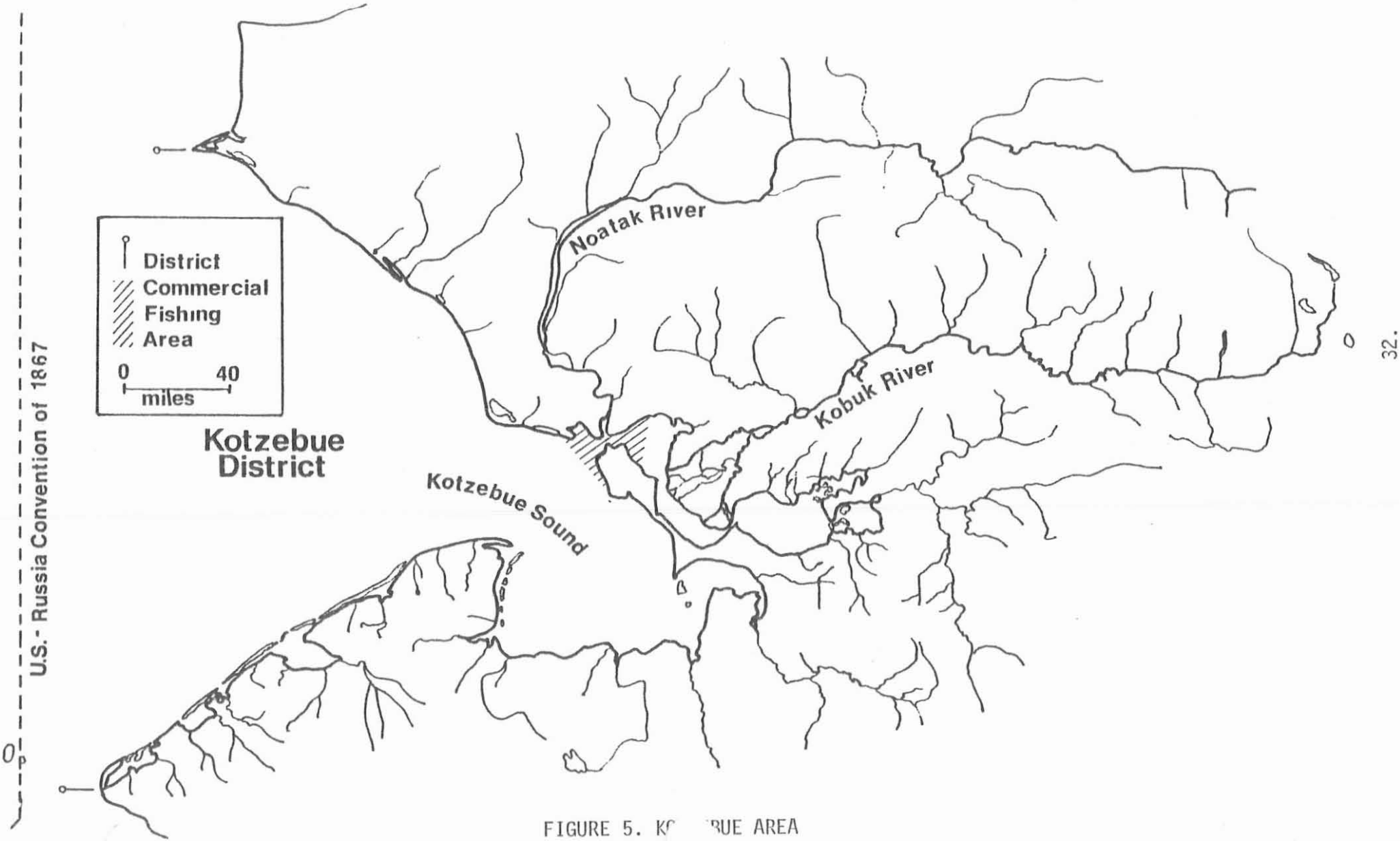


FIGURE 5. KO BUE AREA

Table 13. Commercial and subsistence salmon catches, Kotzebue district, 1914-1978.

Year[1]	Commercial catch			Subsistence	Combined
	Chum	Other[3]	Total	Chum	Catches
1914	8,550		8,550		
1915	4,750		4,750		
1916	19,000		19,000		
1917	44,612		44,612		
1918	27,407		27,407		
1957[4]				298,430	
1962	129,948	127	130,075	20,283	200,358
1963	54,445	143	54,588	31,069	85,657
1964	76,499	5	76,504	29,762	106,266
1965	40,034		40,034	30,500	70,534
1966	30,764	1	30,765	35,588	66,353
1967	29,400		29,400	40,108	69,508
1968	30,384[5]		30,384	20,814	51,198
1969	59,335	48	59,383	29,812	89,195
1970	159,664		159,664	28,486	188,150
1971	154,956	1	154,957	23,959	178,916
1972	169,664	3	169,667	11,085	180,752
1973	375,432	5	375,437	18,942	394,379
1974	634,479[6]	48	634,527	26,729	661,256
1975	563,682[7]	36	563,718	27,605	591,323
1976	159,796	2	159,798	15,765	175,563
1977	195,895		195,895	9,752	205,647
1978	111,494	7,007	118,501	12,864	131,365

[1] There was no commercial fishing during 1919-1961.
Catches for 1914-1918 from pack data only; numbers of chums estimated at 9.5 per case (48#) and 34 per barrel.
[3] Mostly pinks, but includes king salmon and red salmon.
[4] Estimated mean annual catches prior to 1957 (study by Raleigh).
[5] Corrected from 1968 annual report due to addition of late catches.
[6] Includes 6,567 chum salmon harvested from Deering experimental fishery.
[7] Includes 10,704 chum salmon harvested from Deering experimental fishery.